Claims

What is claimed is:

1. A method for fabricating a fiber lens, comprising:

(a) stripping proper length of a coating layer of a fiber to form a bare fiber portion;

(b) cleaning the bare fiber portion;

(c) fixing the fiber into a ferrule included in a holder;

(d) providing a container filled with a layer of hydrofloride, a layer of oil and a middle mixed layer;

(e) immersing the bare fiber portion of the fiber in the container, wherein the bare fiber portion of the fiber is etched by the layer of hydrofloride and the fiber is perpendicular to the surface of the layer of oil to form a cone;

(f) melting the cone by a plurality of electric arcs to form a fiber lens; and

(g) adjusting the relative position between the electric arcs and the cone to form a desired curvature and shape of the fiber lens.

2. The method according to claim 1, wherein the bare fiber portion in step (b) is washed by acetone, alcohol and deionized water.

3. The method according to claim 1, wherein the inner radius of the ferrule is equal to that of the fiber.

4. The method according to claim 1, wherein the thickness of the layer of oil is about 2 mm.

5. The method according to claim 1, wherein the concentration of the hydrofloride is 40% to 60%.

6. The method according to claim 1, wherein the etching time in step (e) is 30 to 50 minutes.

7. The method according to claim 1, wherein the distance between the central point of the electric arcs and the cone is about 1.1 mm.

8. The method according to claim 1, wherein the distance between the central point of the electric arcs and the cone is about 0.5 mm.

9. The method according to claim 1, wherein the radius of the curvature of the fiber lens in step (g) is 8 to 10 μm.

10. The method according to claim 1, wherein the offset between the axis of the fiber lens fabricated in step (g) and the axis of the fiber body is below 1μm.

11. The method according to claim 1, wherein the oil is motor oil.

12. The method according to claim 1, wherein the shape of the fiber lens is hyperbolic.

13. The method according to claim 1, wherein the shape of the fiber lens is hemispherical.

14. The method according to claim 1, wherein the ferrule is a ceramic ferrule.